CLAIMS

1. An electromechanical assembly for an electronic device, the electromechanical assembly comprising at least a printed wired foil and means for electrically connecting the electromechanical assembly to the electronic device, the electronic device comprising at least one cover part and means for mechanically connecting the cover part to the electronic device, wherein the electromechanical assembly and the cover part are arranged to compose an integrated combination which is detachable from the electronic device.

2. An electromechanical assembly according to claim 1, wherein the electromechanical assembly is integrated into the cover part to compose an integrated combination which is detachable from the electronic device.

3. An electromechanical assembly according to claim 2, wherein the printed wired foil is separated from the engine printed wired board of the electronic device.

4. An electromechanical assembly according to claim 2, wherein the printed wired foil comprises:

- wiring to provide electrical connections to contact points and between the contact points for components of the electromechanical assembly and to contact points electrically connecting by connecting means the electromechanical assembly to the electronic device,
- isolation layers,
- decorations, and
- electronic and mechanical components mounted on the appropriate contact points onto the printed wired foil.

5. An electromechanical assembly according to claim 4, wherein the connecting means, preferably small cylindrical connectors are soldered or glued to the contact points electrically connecting the electromechanical assembly to the electronic device.

6. An electromechanical assembly according to claim 5, wherein the electromechanical assembly is an input decive assembly comprising at least an input device connected to a printed wired foil and means for electrically connecting the input device assembly to the electronic device, wherein the input device assembly is integrated into the cover part to compose an integrated combination which is detachable from the electronic device.

7. An electromechanical assembly according to claim 5, wherein the electromechanical assembly is a keypad assembly comprising at least a keypad connected to a printed wired foil and means for electrically connecting the keypad assembly to the electronic device, wherein the keypad assembly is integrated into the cover part to compose an integrated combination which is detachable from the electronic device.

8. An electromechanical assembly according to claim 5, wherein the printed wired foil comprises wiring to provide contact points electrically connecting the electromechanical assembly to a tactile feed back component of the electronic device.

9. An electromechanical assembly according to claim 8, wherein the electromechanical assembly is a touch sensor assembly comprising at least a touch sensor connected to a printed wired foil and means for electrically connecting the touch sensor assembly to the electronic device, wherein the touch sensor assembly is integrated into the cover part to compose an integrated combination which is detachable from the electronic device.

10. An electromechanical assembly according to claim 2, wherein the cover part is exchangeable.

11. An electromechanical assembly according to claim 2, wherein the electronic device is one of the following portable electronic devices: a mobile phone, a communicator, a portable digital assistant, a palmtop computer, a laptop computer, a web ter-

minal equipment, a digital camera, a game device, an entertainment device, a power source, a health care and a measuring device.

12. A cover part for an electronic device, the electronic device comprising an electromechanical assembly which comprises at least a printed wired foil and connecting means for electrically connecting the electromechanical assembly to the electronic device, and the electronic device still comprising means for mechanically connecting the cover part, wherein the electromechanical assembly and the cover part are arranged to compose an integrated combination which is detachable from the electronic device.

13. A cover part according to claim 12, wherein the electromechanical assembly is integrated into the cover part to compose an integrated combination which is detachable from the electronic device.

14. A cover part according to claim 13, wherein the electromechanical assembly is one of the following assemblies: an input device assebly, a keypad assembly and a touch sensor assembly.

15. A cover part according to claim 14, wherein the cover part is manufactured by injection moulding.

16. A cover part according to claim 15, wherein the electromechanical assembly is arranged to be an insert during the injection moulding process.

17. A cover part according to claim 16, wherein the cover part is exchangeable.

18. A cover part according to claim 17, wherein the electronic device is one of the following portable electronic devices: a mobile phone, a communicator, a portable digital assistant, a palmtop computer, a laptop computer, a web terminal equipment, a

digital camera, a game device, an entertainment device, a power source, a health care and a measuring device.

19. A method for manufacturing an electromechanical assembly for an electronic device, the electromechanical assembly comprising at least a printed wired foil, and the electronic device comprising at least one cover part, the method comprising steps:

- electrically connecting the printed wired foil to the electromechanical assembly and to the electronic device,
- mechanically connecting the cover part to the electronic device, and
- composing the electromechanical assembly and the cover part to be an integrated combination which is detachable from the electronic device.

20. A method for manufacturing an electromechanical assembly according to claim 19, the method comprising a step of integrating the electromechanical assembly into the cover part to compose an integrated combination which is detachable from the electronic device.

21. A method for manufacturing an electromechanical assembly according to claim 20, wherein the printed wired foil is a multi-layer printed wired foil.

22. A method for manufacturing an electromechanical assembly according to claim 21, wherein the step of electrically connecting comprises further steps:

- printing with conductive ink the wiring onto the printed wired foil to provide electrical connections to contact points and between the contact points for components of the electromechanical assembly, and to contact points electrically connecting the electromechanical assembly to the electronic device,
- printing with non-conductive ink the isolation layers onto the printed wired foil, and
- printing with coloured ink decorations onto the printed wired foil.

23. A method for manufacturing an electromechanical assembly according to claim 22, wherein the step of electrically connecting comprises further step of printing with conductive ink the wiring onto the printed wired foil to provide electrical connections to at least one contact point electrically connecting the electromechanical assembly to a tactile feed back component of the electronic device.

24. A method for manufacturing an electromechanical assembly according to claim 23, wherein the step of electrically connecting comprises further steps of cutting a hole through the printed wired foil at the contact point to the tactile feedback component to provide electrical connection to the tactile feedback component.

25. A method for manufacturing an electromechanical assembly according to claim 24, wherein the step of electrically connecting comprises steps of printing a lower surface of a printed foil and processing an upper surface of the printed foil to be finger touchable, and printing an upper surface of a printed wired foil, the printed foil being above the printed wired foil, the method comprising a further step of placing a dome sheet layer between the printed foil and the printed wired foil, wherein the dome sheet is electrically conductive at the concave surface of each dome.

26. A method for manufacturing an electromechanical assembly according to claim 25, wherein the printed foil is a first printed wired foil and the printed wired foil is a second printed wired foil.

27. A method for manufacturing an electromechanical assembly according to claim 26, wherein the method comprises a step of thermoforming of the printed wired foil to a desired shape to generate a formed printed wired foil.

28. A method for manufacturing an electromechanical assembly according to claim 27, wherein the method comprises a step of thermoforming of a combination of the printed foil and the printed wired foil to a desired shape to generate a formed printed wired foil.

29. A method for manufacturing an electromechanical assembly according to claim 28, wherein the method comprises a step of mounting electrical and mechanical components to the formed printed wired foil.

30. A method for manufacturing an electromechanical assembly according to claim 29, wherein the method comprises a step of mounting the connecting means, preferably small cylindrical connectors, by soldering or glueing one end of the connecting means to the wiring of the formed printed wired foil.

31. A method for manufacturing an electromechanical assembly according to claim 30, wherein the step of mounting mechanical components comprises further steps of mounting a keymat to the formed printed wired foil and printing with conductive ink the wiring onto the keymat to provide electrical connections to contact points and between the contact points for keypad of the electromechanical assembly.

32. A method for manufacturing an electromechanical assembly according to claim 31, wherein the method comprises a step of placing a support layer under the formed printed wired foil, the support layer comprising a rigid light guide emitting the light upward in the place of each dome.

33. A method for manufacturing an electromechanical assembly according to claim 32, wherein the method comprises a step of placing a support layer under the formed printed wired foil, the support layer comprising an electroluminescence foil emitting the light upward in the place of each dome.

34. A method for manufacturing a cover part for an electronic device, the electronic device comprising at least an electromechanical assembly which comprises at least a printed wired foil, wherein the method comprises steps of:

- electrically connecting the printed wired foil to the electronic device,
- mechanically connecting the cover part to the electronic device, and

- composing the electromechanical assembly and the cover part to be an integrated combination which is detachable from the electronic device.

35. A method for manufacturing a cover part according to claim 34, wherein the method comprising a step of integrating the electromechanical assembly into the cover part to compose an integrated combination which is detachable from the electronic device.

36. A method for manufacturing a cover part according to claim 35, wherein the electromechanical assembly comprises a formed printed wired foil and connecting means, preferably small cylindrical connectors, first end of the connecting means electrically connected to the wiring of the formed printed wired foil.

37. A method for manufacturing a cover part according to claim 36, wherein the electromechanical assembly is an insert during the injection moulding process.

38. A method for manufacturing a cover part according to claim 37, wherein the method comprises further step of:

- inserting the formed printed wired foil on top of a first mould comprising a through hole to a position where the second end of the connecting means are directed towards the first mould,
- placing a cover foil on top of the formed printed wired foil,
- placing a second mould on top of the cover foil so that a cavity is provided between the second mould and the formed printed wired foil, a lower edge of the second mould following a shape of the formed printed wired foil,
- setting the first mould and the second mould against each other so that the lower edge of the second mould is engaged to the cover foil and the combination of the first and second mould is held still, and
- injecting molten resin via the through hole to the cavity between the first mould and the cover foil.

39. A method for manufacturing a cover part according to claim 38, wherein the method comprises after the step of injecting a further step of cleaning, preferably grinding, the second end of the connecting means for electrically connecting the electromechanical assembly to the electronic device.

40. A method for manufacturing a cover part according to claim 39, wherein a step of placing a cover foil on top of the formed printed wired foil comprises a step of placing a perforated cover foil on top of the formed printed wired foil comprising a dome sheet layer, wherein a perforation of the cover foil is locating at the location of the dome of the dome sheet, so that the perforated cover foil and the formed printed wired foil with domes compose a solid combination.

41. A method for manufacturing a cover part according to claim 39, wherein the step of injecting melted plastic comprises a further step of seaming joints between edges of the perforations of the cover foil and the dome sheet during the injection moulding.

42. A method for manufacturing a cover part according to claim 38, wherein the step of inserting comprises a step of inserting the formed printed wired foil on top of a first mould comprising a through hole and a bump on top and placing the formed printed wired foil to a position where the bump masks the contact points from the electromechanical assembly to the electronic device, and after injection moulding mounting the connecting means to the place of the bumps.

43. A method for manufacturing a cover part according to claim 41, wherein the cover foil is a prefabricated cover part of the electronic device.

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